

# **Massachusetts Department of Corrections**

## **Preparing for the Post Offer Physical Abilities Test and Physical Training of the Training Academy**

### **Background:**

Employees responsible for the care and custody of inmates must be able to meet the heavy physical demands of this position. Responding to emergency situations requires the ability to get quickly to the emergency site (running and stair climbing), assist injured or ill staff or inmates (heavy lifting and carrying), and occasionally physical restraint of inmates (whole body pushing and pulling). Because of the critical life safety nature of these situations it is essential that every Officer be physically capable at all times of meeting these physical demands of the job. Therefore, the Department utilizes a Physical Abilities Test (PAT) to determine that selected applicants have sufficient physical capacity to safely meet all the physical demands of the position. The Academy further prepares every Officer physically and mentally to meet the essential demands of the job. This packet is designed to help you physically prepare to meet the requirements of the PAT and the Training Academy.

### **What are the requirements of the Physical Abilities Test (PAT)?**

The PAT is an eleven item test, designed to assess your physical ability to respond to an actual emergency situation on the job, by simulating a response to a “code” (Officers requiring assistance).

In this scenario, you are manning a post at one corner of the prison campus. Your beeper goes off indicating a Code Red, which at your facility means for all available Officers to respond to a sudden emergency situation. The location of the code is at the far corner of the campus, which is approximately a half mile.

Step one of PAT, you will run a half mile on the treadmill at 5 mph (6 minutes) to simulate getting to the building where the emergency situation is occurring.

On arriving at the building you realize the code is on the top floor. You run up the steps to the top floor.

Step two of PAT, you will perform a step test, stepping up and down a twelve inch high step for three minutes at a pace of ninety-six steps per minute.

When you arrive at the top floor, you note that the inmates have created a disturbance. Two of your fellow Officers are lying on the floor unconscious, while the inmates are now fighting among themselves. Your first responsibility is to remove the fallen Officers to safety. You will remove the first Officer (weighing 170 pounds) using the assistance of another Officer that has responded to the scene. This means you must be able to lift and carry 85 pounds (half the body weight) by yourself.

Step three of the PAT requires that you lift an 85 pound mannequin from the floor and carry it in your arms for a distance of 100 feet.

You now remove the second fallen Officer (weight 185 pounds) from the scene. In this part of the scenario, the Officer who was assisting you is now busy trying to subdue the inmates. You must remove the 185 pound Officer by yourself, dragging him on a sheet.

Step four of the PAT requires that you drag the 85 pound mannequin and a 100 pound box both placed on a sheet, for a distance of 25 feet on a smooth tile or concrete floor.

Now that you have removed the fallen Officers to safety, your next responsibility is to assist the other Officers that have responded to the code, by restraining the violent inmates.

This task requires repetitive forceful whole body pushing and pulling on your part to move the uncooperative inmates against the wall or onto the floor.

Step five of the PAT requires that you push a weighted sled a distance of 20 feet forward and pull 20 feet backwards five repetitions in two minutes or less. The wood sled is carpeted on the bottom and pushed across a concrete floor with 70 pounds of weight in the sled.

Now that the inmates are subdued injured Officers and/or inmates can be removed from the cell block by stretcher to receive medical care. Lifting of an adult placed on an ambulance stretcher requires the individual on each end of the stretcher to lift at least 110 pounds from floor to waist and may also require lifting of at least 80 pounds to chest level.

Step six of the PAT requires lifting of a box weighted at 110 pounds from the floor to an upright standing position with the elbows remaining straight. The test requires five lifts in thirty seconds or less.

Step seven of the PAT requires lifting of a box weighted at 80 pounds from the floor to an upright standing position with the elbows bent to approximately ninety degrees (forearms parallel to the floor). The test requires five lifts in thirty seconds or less.

In order to try and start such disturbances, inmates at some facilities tend to plug up their toilets, flush them repeatedly, to flood the cell, so the Officers will be forced to remove them from the cell. At some facilities, the Officers must go down a long access passageway behind the cells to reach shut off valves for the water. The passageway is only seventeen inches wide.

Step eight of the PAT requires that you successfully sidestep through a short passageway that is only seventeen inches wide.

Control of this emergency situation concludes with applying passive restraints (handcuffs and/or shackles) to the combative inmates such that they can be moved back to their cells in a controlled manner. To apply passive restraints to inmates on the floor you will need to be able to stoop (bend at the waist with legs straight), squat and kneel for extended periods.

Step nine of the PAT requires that you stand bent over at the waist (about two thirds of the way down, approximately sixty degrees), with knees straight, for sixty seconds.

Step ten of the PAT requires that you maintain a full squat position for sixty seconds. It is not required that you keep both feet flat. Squatting with the heels off the floor is permitted.

Step eleven of the PAT requires that you kneel on both knees with the rest of the body upright for sixty seconds.

Your heart rate will be monitored throughout the test for safety purposes, and for determination of your overall fitness. Heart rate performance will not be used for pass-fail determinations. Failure of any test item indicates that you are currently not able to safely perform all the essential functions of the job and you will not proceed further in the hiring process.

### **What will Physical Training at the Academy be like?**

To ensure that all new Officers are physically capable of meeting the intermittently high physical demands of maintaining the safety and security of staff and inmates at all times, the Academy utilizes a progressive fitness training model. Fitness guidelines are based on extensive research conducted by the Cooper Institute of Dallas, Texas ([www.cooperinstitute.org](http://www.cooperinstitute.org)). These guidelines are utilized by numerous Police and Correctional Officer Training Academies throughout the country.

Upon entering the Academy your physical condition will be assessed by the Cooper Fitness Test. The test includes:

- 1.5 mile run
- Push Up maximum
- Sit Ups one minute maximum

There is no set criteria on this test for admission, or successful completion, of the Academy. However, these standards are well researched and are highly beneficial in setting goals for your physical training at the Academy. The Instructors will utilize your performance on the Cooper Test to assist them in designing a training program to maximize your fitness by the end of the ten weeks of the Academy. Remember, the safety and security of other staff, and the inmates, depends on you having sufficient strength, flexibility, and endurance to appropriately respond to an emergency or crisis at any time.

The Cooper Test has been performed on thousands of people in order to generate norms (where each person's fitness is compared to the rest of the population). Your performance on the three items of the Cooper Test will be compared to these norms. Normative data for the total adult population, and for sub-populations identified by age and gender are included below as a source for you to test your own fitness prior to the Academy. Ideally, you should be at least above the 40<sup>th</sup> percentile on entering the Academy and well above the 50<sup>th</sup> percentile on completion of the Academy.

#### **Cooper Physical Fitness Norms – Whole Population (ages 18-60, both genders)**

<b>Fitness</b>	<b>Percentile</b>	<b>1.5 Mile Run</b>	<b>Sit Ups</b>	<b>Push Ups</b>
Excellent	90	11:38	41.7	38
Excellent	80	12:51	37.0	32
Good	70	13:35	34.4	26
Good	60	14:15	31.7	23
Fair	50	14:46	29.3	21
Fair	40	15:20	27.1	18
Poor	30	15:50	24.5	15
Very Poor	20	16:31	22.1	12

#### **Cooper Physical Fitness 50<sup>th</sup> Percentile – Female**

<b>1.5 Mile Run</b>			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
14:55	15:26	16:27	17:24

<b>Sit Ups in One Minute</b>			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
35	27	22	17

<b>Push Ups</b>			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
18	14	11	

#### **Cooper Physical Fitness 50<sup>th</sup> Percentile – Male**

1.5 Mile Run			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
12:18	12:51	13:53	14:55

Sit Ups in One Minute			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
40	36	31	26

Push Ups			
20-29 years old	30-39 years old	40-49 years old	50-59 years old
33	27	21	15

After completing the Cooper Test at the beginning of the Academy, you will begin participation in a regular conditioning program of stretching, warm ups, cool downs, running, push ups, sit ups, and calisthenics such as jumping jacks.

**How can I begin preparing now, to give me a better chance of passing the PAT and performing well with physical training at the Academy?**

**First, assess your current health and fitness level**

Before starting exercise:

If you have been sedentary (not exercising for quite a while), have or suspect health problems such as heart disease, diabetes, high blood pressure, high cholesterol, joint problems, etc., or are over 40 or overweight, it is recommended that you have a physical with your doctor before starting a vigorous exercise program. If you know you have no major health problems, it is still advisable to speak with your personal physician, to determine if your physician feels a physical may be indicated in your specific case.

Warm up:

Begin with 5-10 minutes of light walking, progressing to brisk walking, followed by light stretching of the trunk, arms, and legs.

Perform a trial simulation of the PAT:

You will need a treadmill that can be set at 5 mph, or measure a half mile course to run, a stopwatch, a sturdy box or crate with handles that can hold 110 pounds of weight, a 12 inch high step, and a sheet placed on a smooth floor with something weighing about 75 pounds on the sheet. Simulating the sled push and pull will likely not be possible unless you are doing your simulation in a gym. To simulate the sled push and pull, you can use pulleys for pushing and pulling at a gym weighted at 50 pounds.

To perform a simulation of the PAT:

- Run 6 minutes on treadmill at 5 mph, or a half mile course in 6 minutes.
- Immediately following, begin going up and down a 12 inch step at a pace of 96 steps per minute. You can check yourself with a stopwatch counting 24 steps (up, up, down, down equals 4 steps) every 15 seconds. Step for 3 minutes total.
- Pick up your box that you have weighted to 85 pounds and carry 100 feet.

- Place the box on the sheet with an additional 100 pounds in the box. Drag the sheet 25 feet
- If you have pulleys set at 50 pounds, pull the pulley handle out four feet ten repetitions, then push the pulley handle out four feet ten repetitions.
- Load your box or crate with 110 pounds of weight. Lift it from floor to standing upright five repetitions.
- Reduce the weight of the box to 80 pounds. Lift it from floor to standing upright with bending elbows to about ninety degrees (forearms parallel to the floor) five repetitions.

Remember these steps are all done in a continuous circuit, similar to what would be required on the job. The last four steps of the PAT can be tested separately. Simply make certain you can step through a narrow space sideways that is seventeen inches wide. Then make sure that you can stoop (bend at waist), squat, and kneel, for sixty seconds each.

#### Perform a trial simulation of the Cooper Test:

On a separate occasion from testing yourself on the PAT, perform a warm up as noted above.

- Time yourself for a measured 1.5 mile run. Your goal should be to achieve at least the 40<sup>th</sup> percentile of 15 minutes 20 seconds and ideally better than the 50<sup>th</sup> percentile of 14 minutes 46 seconds. This is approximately 6 mph on a treadmill for 15 minutes.
- Sit-ups are performed laying on your back, knees bent, feet flat, fingers laced behind your head. Someone should hold your feet in place. A correct sit-up is curling up the head and shoulders until the elbows touch the knees then returning to the start position (should blades touching mat). Pulling forcibly on the head, thrusting forward, or raising the buttocks is not permitted. Resting in the upright position (elbows touching knees) is permitted, but the test is timed at one minute. Your goal should be to achieve at least the 40<sup>th</sup> percentile of 27 sit-ups and ideally better than the 50<sup>th</sup> percentile of 29 sit-ups.
- Push ups are performed laying face down, palms under the shoulders, fingers facing forward. Correct push ups will begin with you in the up position (elbows locked straight, body straight, body weight supported on hands and toes). The body is lowered towards the floor. A proctor will place a fist under your sternum (bone in the center of your rib cage). You must lower your sternum to touch the fist and rise to start position to complete one push up. Resting is permitted in the start position only and back and knees must remain straight. Testing continues until you are unable to perform any more push ups. Your goal should be to achieve at least the 40<sup>th</sup> percentile of 18 push ups and ideally better than the 50<sup>th</sup> percentile of 21 push ups.

**After testing yourself on the PAT and Cooper Test, begin a personal training program to maximize your fitness, specific to how it will be measured in these two tests:**

Human fitness has four components: cardiopulmonary endurance, musculoskeletal endurance, muscular strength, and flexibility. Cardiopulmonary endurance is basically the ability of your heart and lungs to supply oxygenated blood to your tissues for sustained activity. The half mile run and step test of the PAT, and the 1.5 mile run of the Cooper Test are measures of your cardiopulmonary endurance in relation to the physical demands of the Officer job description. Musculoskeletal endurance is the ability of your muscles to exert sustained or

repetitive muscle contractions, such as is required for physical restraint of uncooperative inmates. The sled push and pull, the mannequin carry, and sheet drag of the PAT are measures of whole body musculoskeletal endurance. In the Cooper Test, sit ups are a measure of core body (trunk), and push ups are a measure of upper body, musculoskeletal endurance.

Muscular strength is the ability of your muscles to exert maximal force for very brief periods of time. The lift floor to standing upright of 110 pounds and lift floor to waist of 80 pounds of the PAT are measures of muscular strength. Flexibility is the ability of the body to obtain and maintain required positions and is related to individual muscle and ligament length. The stoop, squat, and knee of the PAT are measures of flexibility.

In order to perform well on the PAT, the Cooper Test, and throughout the physical training of the Academy, it is advisable to participate in a fitness program that addresses all of these areas.

It is also important to note that an Officer must be ready throughout his/her career to respond immediately to emergency situations that are highly physically demanding. It is therefore strongly recommended that this physical training become an ongoing lifestyle as opposed to simply preparation for the initial selection and training process.

Maximal improvement in physical fitness, as measured by the PAT and Cooper Test, will be achieved through a fitness program that incorporates the actual assessment items of these two tests. Below are some sample training regimens to progressively improve your fitness in these areas:

How to train for the .5 mile run of PAT and 1.5 mile run of Cooper Test:

The schedule below is a proven, progressive routine designed to gradually increase your cardiopulmonary endurance. Begin at the level you can safely accommodate (e.g. if you have already been walking 2 miles in 28 minutes, start at week 5). If you can advance the schedule on a weekly basis, then proceed to the next level. If you can do the distance safely in less time, do so.

<b>Week</b>	<b>Activity</b>	<b>Distance in Miles</b>	<b>Duration in Minutes</b>	<b>Times Per Week</b>
1	Walk	1	17-20	5
2	Walk	1.5	25-29	5
3	Walk	2	32-35	5
4	Walk	2	28-30	5
5	Walk/Jog	2	27	5
6	Walk/Jog	2	26	5
7	Walk/Jog	2	25	4
8	Walk/Jog	2	24	4
9	Jog	2	23	4
10	Jog	2	22	4
11	Jog	2	21	4
12	Jog	2	20	4

At the end of week 12, you will be able to easily complete the .5 mile run of the PAT and will be able to achieve the 50<sup>th</sup> percentile norm of the Cooper Test 1.5 mile run of 14 minutes 46 seconds.

### Preparation for the Step Test of the PAT:

The Step Test is performed utilizing a 12 inch high step. You are required to step up and down the step for 3 minutes total at a pace of 96 steps (up, up, down, down equals a count of four steps). It is easiest to practice this test with a metronome, but a stopwatch can be used as well. To practice with a stopwatch count the number of steps you perform every 15 seconds (goal 24 steps every 15 seconds). To train for this test you can start with a smaller height step (8 or 10 inches high) or start with a slower pace (60 steps per minute). To improve your performance, practice this test every day for at least three minutes. Some people find it beneficial to practice for 5 minutes. Gradually increase the pace and/or step height until the test goal is easily achievable for you.

### How to improve performance for the Lifting and Carrying Requirements of the PAT:

The requirements of the PAT include lifting and carrying an 85 pound mannequin a distance of 100 feet, lifting a 110 pound box from floor to standing upright with elbows straight (“floor to knuckle”) five repetitions, and lifting an 80 pound box floor to waist height, elbows bent to ninety degrees (“floor to elbow”) five repetitions. If you are unable to easily perform these three tasks, it will be necessary for you to utilize a progressive strengthening program to increase your lifting capacity. It is important to realize that proper warm up, stretching, and lift technique are essential to maximizing performance and preventing injury. If you have not previously been taught how to train in a weight lifting program, it is very important that you consult with a physical therapist, athletic trainer, or personal trainer.

One of the best methods for increasing performance in lifting and carrying activities is the Daily Adjusted Progressive Resistance Exercise (DAPRE) program. This method allows you to place enough stress on your muscles to gradually increase strength while reducing the risk of injury to the muscle as much as possible. This program utilizes four sets of an exercise performed every other day to progressive increase strength. To understand this approach, let’s use an example of improving your ability to conduct the floor to elbow lift. The first step is to determine your one repetition maximum. Perform a floor to elbow lift with a barbell or weighted box. Keep adding weight to the barbell or box until you cannot lift any more without losing proper technique (examples of improper: jerking on the box or having to lean backwards to bring the box higher). This is your one repetition maximum (RM). In this case, let’s say your one repetition maximum for floor to elbow lift is 60 pounds. To pass the PAT you need to be able to do this lift with 80 pounds five repetitions. Your every other day lifting program will begin with a first set of 10 repetitions at 50% RM (30 pounds), followed by a 30 second rest, then second set of 6 repetitions at 75% RM (45 pounds), rest, then a third set at 100% RM (60 pounds) doing as many repetitions as you can (Table 1). Depending on how many repetitions you can do in set three, you will adjust the weight for the fourth set, and you will also make an adjustment to your next exercise session (Table 2). For example, if in set three you can only do 2 repetitions, you will drop the weight for set 4 by 5 pounds and drop all the weights next session (day after tomorrow) by 5 pounds. But, as you improve over the next few sessions you are now able to perform nine repetitions with the 60 pounds on the third set. At this point you would add 5 pounds to set 4 and five pounds to each of your sets next session. In this way, you should be able to safely improve your strength to meet the test requirement of 80 pounds for five repetitions.

**Table 1: DAPRE Strengthening Regimen**

Set	Weight	Repetitions
1	50% RM	10
2	75% RM	6
3	100% RM	As many as possible
4	Adjusted working weight	As many as possible

**Table 2: Guidelines for determining adjusted working weight**

Number of repetitions done in third set	Adjusted working weight for fourth set	Amount to adjust each set for next exercise session
0-2	-5 pounds	-5 pounds
3-4	-5 pounds	Same weight
5-6	Same weight	+5 pounds
7-10	+5 pounds	+5 pounds
11+	+10 pounds	+10 pounds

**How to improve performance for Dragging, Pushing and Pulling Requirements of the PAT:**

The PAT requires dragging of 185 pounds on a sheet across a smooth floor for a distance of 25 feet. The PAT also requires pushing and pulling of a weighted sled for 5 continuous cycles of forty feet. The dragging, pushing and pulling requirements are approximately the same amount of force as pulling and pushing 50 pounds on a cable pulley system that is found in most gyms. It is recommended that you test how much weight you can comfortably push and pull on a pulley system. To test yourself, simply hold onto the pulley handle at waist height and walk backwards (pulling) or walk forwards (pushing) the distance the pulley will extend from its attachment. If you can comfortably push and pull repetitively 50 pounds on the pulleys you should be able to successfully complete these portions of the PAT. If you have difficulty with, or are unable to push and pull the 50 pounds, it is recommended that you begin a progressive strengthening program on the pulleys utilizing the DAPRE technique noted above.

**Assessing your ability to perform steps 8 through 11 of the PAT:**

Step 8 of the PAT requires that you be able to side step through a short 17 inch passageway. To test yourself, use a tape measure to move an object (table or chair is fine) 17 inches from the wall, and make sure you can side step between the wall and the object without moving the object. If you are unable to do so, due to your body circumference, you will need to participate in a weight loss regimen to reduce your girth. Consult with your personal physician to determine a weight loss regimen that is right for you.

Steps 9 through 11 of the PAT require that you be able to stoop, squat, and kneel on both knees, for 60 seconds each. You can easily test this with a stopwatch or clock. If maintaining any of these positions for one minute causes you pain, you should consult with your physician to identify and alleviate the source of pain prior to participating in the PAT.

**How to improve the number of sit ups you can perform in one minute:**

The Cooper Test indicates that a reasonable number of sit ups a moderately fit individual should be able to perform is at least 27 to 29 sit ups in one minute. If you are unable to perform this many sit ups in one minute, the following training regimen is recommended:

1. Determine the number of correct sit ups you can do in one minute.
2. Multiply that number by .75 (75%). Round to the nearest whole number. This will be the number of repetitions of sit ups you initially do in each set of your training regimen.
3. Warm up with some light activity of your choice, exercise bike, walking, light jogging, calisthenics, etc.
4. Perform the number of sit ups, emphasizing correct form, as determined in #2 above.
5. Rest 60 seconds or less, then do another set of repetitions.
6. Repeat steps 4 and 5 until you have done 3 to 5 sets of sit ups. Even though the last sets may be difficult, be sure to maintain proper form.
7. Do this routine every other day. Increase the number of reps per set by 1 or 2 each week until your goal is met. If you are unable to increase each week, you may need the assistance of an exercise professional to help you structure a more specific exercise program to assist you in meeting your goals.

How to improve the number of push ups you can perform:

The Cooper Test indicates that a reasonable number of push ups a moderately fit individual should be able to perform is at least 18 to 21 push ups with correct form before fatiguing. If you are unable to perform this many push ups, the following training regimen is recommended:

8. Determine the number of correct push ups you can do with correct technique.
9. Multiply that number by .75 (75%). Round to the nearest whole number. This will be the number of repetitions of push ups you initially do in each set of your training regimen.
10. Warm up with some light activity of your choice, exercise bike, walking, light jogging, calisthenics, etc.
11. Perform the number of push ups, emphasizing correct form, as determined in #2 above.
12. Rest 60 seconds or less, then do another set of repetitions.
13. Repeat steps 4 and 5 until you have done 3 to 5 sets of push ups. Even though the last sets may be difficult, be sure to maintain proper form.
14. Do this routine every other day. Increase the number of reps per set by 1 or 2 each week until your goal is met. If you are unable to increase each week, you may need the assistance of an exercise professional to help you structure a more specific exercise program to assist you in meeting your goals.

**Important Note: Stressing your body for improving physical fitness does include the risk of sustaining injury. Muscle soreness on beginning an exercise program is common. Sharp pain in the muscles, or any pain in the joints, is not an expected outcome of exercise. In the case of sharp pain, joint pain, or any unexpected pain, discontinue your exercise regimen until you consult your physician.**